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Report on the individual review of the annual submission of Austria submitted in 2014*

* In the symbol for this document, 2014 refers to the year in which the inventory was submitted, and not to the year of publication.

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I. Introduction and summary

1. This report covers the review of the 2014 annual submission of Austria, coordinated by the UNFCCC secretariat, in accordance with the "Guidelines for review under Article 8 of the Kyoto Protocol" (decision 22/CMP.1) (hereinafter referred to as the Article 8 review guidelines). The review took place from 8 to 13 September 2014 in Bonn, Germany, and was conducted by the following team of nominated experts from the UNFCCC roster of experts: generalists – Mr. Tinus Pulles (Netherlands) and Ms. Kristina Saarinen (Finland); energy – Mr. Ricardo Fernandez (European Union), Mr. Akira Osako (Japan) and Mr. Moshe Yanai Axelrod (Israel); industrial processes and solvent and other product use – Mr. Joseph Amankwa Baffoe (Ghana) and Mr. Jacek Skoskiewicz (Poland); agriculture – Ms. Janka Szemesová (Slovakia) and Mr. Marcelo Theoto Rocha (Brazil); land use, land-use change and forestry (LULUCF) – Ms. Maria Fernanda Alcobé (Argentina), Mr. Matt Searson (Australia) and Mr. Richard Volz (Switzerland); and waste – Mr. Eduardo Calvo (Peru) and Mr. Igor Ristovski (former Yugoslav Republic of Macedonia). Ms. Saarinen and Mr. Theoto Rocha were the lead reviewers. The review was coordinated by Ms. Astrid Olsson (UNFCCC secretariat).

2. In accordance with the Article 8 review guidelines, a draft version of this report was sent to the Government of Austria, which provided comments that were considered and incorporated, as appropriate, into this final version of the report. All encouragements and recommendations in this report are for the next annual submission, unless otherwise specified.

3. All recommendations and encouragements included in this report are based on the expert review team's (ERT's) assessment of the 2014 annual submission against the Article 8 review guidelines. The ERT has not taken into account the fact that Parties will prepare the submissions due by 15 April 2015 using the revised "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories" adopted through decision 24/CP.19. Therefore, when preparing the next annual submissions, Parties should evaluate the implementation of the recommendations and encouragements in this report, in the context of those guidelines.

4. In 2012, the main greenhouse gas (GHG) emitted by Austria was carbon dioxide (CO_2), accounting for 84.6 per cent of total GHG emissions[1] expressed in CO_2 equivalent (CO_2 eq), followed by methane (CH_4) (6.6 per cent) and nitrous oxide (N_2O) (6.5 per cent). Hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6) collectively accounted for 2.2 per cent of the overall GHG emissions in the country. The energy sector accounted for 74.6 per cent of total GHG emissions, followed by the industrial processes sector (13.6 per cent), the agriculture sector (9.4 per cent), the waste sector (2.1 per cent) and the solvent and other product use sector (0.4 per cent). Total GHG emissions amounted to 80,059.36 Gg CO_2 eq and increased by 2.5 per cent between the base year[2] and 2012. The ERT concluded that the description in the national inventory report (NIR) of the trends for the different gases and sectors is reasonable.

5. Tables 1 and 2 show GHG emissions from sources included in Annex A to the Kyoto Protocol (hereinafter referred to as Annex A sources), emissions and removals from

[1] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified.

[2] "Base year" refers to the base year under the Kyoto Protocol, which is 1990 for all gases. The base year emissions include emissions from sources included in Annex A to the Kyoto Protocol only.

the LULUCF sector under the Convention and emissions and removals from activities under Article 3, paragraph 3, and, if any, elected activities under Article 3, paragraph 4, of the Kyoto Protocol (KP-LULUCF), by gas and by sector and activity, respectively.

6. Information to be included in the compilation and accounting database can be found in annex I to this report.

Table 1

Greenhouse gas emissions from Annex A sources and emissions/removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol by gas, base year[a] to 2012

			Gg CO_2 eq								*Change (%)*
		Greenhouse gas	*Base year*	*1990*	*1995*	*2008*	*2009*	*2010*	*2011*	*2012*	*Base year–2012*
Annex A sources		CO_2	62 017.75	62 017.75	63 924.04	73 804.48	67 567.76	72 366.12	70 353.70	67 733.47	9.2
		CH_4	8 332.12	8 332.12	7 651.93	5 743.37	5 642.35	5 562.12	5 393.54	5 306.18	–36.3
		N_2O	6 197.92	6 197.92	6 606.37	5 694.16	5 417.43	5 178.53	5 283.00	5 221.63	–15.8
		HFCs	22.55	22.55	339.64	1 082.02	1 134.26	1 285.65	1 349.00	1 431.45	6 247.9
		PFCs	1 022.65	1 022.65	68.39	167.13	28.64	63.93	60.07	40.46	–96.0
		SF_6	493.37	493.37	1 153.20	390.87	357.54	351.50	321.53	326.18	–33.9
KP-LULUCF	Article 3.3[b]	CO_2				–877.66	–1 450.96	–1 469.54	–1 488.11	–1 506.69	
		CH_4				NO	NO	NO	NO	NO	
		N_2O				1.33	1.35	1.27	1.19	1.11	
	Article 3.4[c]	CO_2	NA			NA	NA	NA	NA	NA	NA
		CH_4	NA			NA	NA	NA	NA	NA	NA
		N_2O	NA			NA	NA	NA	NA	NA	NA

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable, NO = not occurring.

[a] The base year for Annex A sources refers to the base year under the Kyoto Protocol, which is 1990 for all gases. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

[c] Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation.

Table 2
Greenhouse gas emissions by sector and activity, base year[a] to 2012

			Gg CO_2 eq							*Change (%)*	
		Sector	*Base year*	*1990*	*1995*	*2008*	*2009*	*2010*	*2011*	*2012*	*Base year 2012*
Annex A sources		Energy	55 425.27	55 425.27	57 703.82	64 888.46	60 548.85	64 405.46	62 000.40	59 691.53	7.7
		Industrial processes	10 005.29	10 005.29	9 800.84	11 910.88	9 738.75	10 780.73	11 125.32	10 877.24	8.7
		Solvent and other product use	511.80	511.80	422.45	367.24	299.16	327.12	319.75	334.56	–34.6
		Agriculture	8 556.71	8 556.71	8 719.98	7 652.61	7 633.61	7 468.13	7 578.42	7 499.03	–12.4
		Waste	3 587.28	3 587.28	3 096.47	2 062.84	1 927.59	1 826.42	1 736.95	1 657.00	–53.8
		LULUCF	NA	–9 877.23	–11 483.83	139.85	–3 904.39	–3 892.80	–3 870.97	–3 838.52	NA
		Total (with LULUCF)	**NA**	**68 209.13**	**68 259.73**	**87 021.88**	**76 243.58**	**80 915.05**	**78 889.87**	**76 220.84**	**NA**
		Total (without LULUCF)	**78 086.35**	**78 086.35**	**79 743.56**	**86 882.03**	**80 147.97**	**84 807.85**	**82 760.84**	**80 059.36**	**2.5**
		Other[b]	NA	NA	NA	NA	NA	NA	NA	NA	NA
KP-LULUCF	Article 3.3[c]	Afforestation and reforestation				–1 947.59	–2 032.69	–2 039.08	–2 045.47	–2 051.86	
		Deforestation				1 071.26	583.08	570.81	558.54	546.28	
		Total (3.3)				**–876.33**	**–1 449.61**	**–1 468.27**	**–1 486.93**	**–1 505.58**	
	Article 3.4[d]	Forest management				NA	NA	NA	NA	NA	
		Cropland management	NA			NA	NA	NA	NA	NA	NA
		Grazing land management	NA			NA	NA	NA	NA	NA	NA
		Revegetation	NA			NA	NA	NA	NA	NA	NA
		Total (3.4)	**NA**			**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NA = not applicable.

[a] The base year for Annex A sources is the base year under the Kyoto Protocol, which is 1990 for all gases. For activities under Article 3, paragraph 3, of the Kyoto Protocol and forest management under Article 3, paragraph 4, only the inventory years of the commitment period must be reported.

[b] Emissions/removals reported in the sector other (sector 7) are not included in Annex A to the Kyoto Protocol and are therefore not included in national totals.

[c] Activities under Article 3, paragraph 3, of the Kyoto Protocol, namely afforestation and reforestation, and deforestation.

[d] Elected activities under Article 3, paragraph 4, of the Kyoto Protocol, including forest management, cropland management, grazing land management and revegetation.

II. Technical assessment of the annual submission

A. Overview

1. Annual submission and other sources of information

7. The 2014 annual submission was submitted on 14 April 2014; it contains a complete set of common reporting format (CRF) tables for the period 1990–2012 and an NIR. Austria also submitted the information required under Article 7, paragraph 1, of the Kyoto Protocol, including information on: activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, accounting of Kyoto Protocol units, changes in the national system and in the national registry and the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol. The standard electronic format (SEF) tables were submitted on 14 April 2014. The annual submission was submitted in accordance with decision 15/CMP.1.

8. The list of other materials used during the review is provided in annex II to this report.

2. Questions of implementation raised in the 2013 annual review report

9. The ERT noted that no questions of implementation have been raised in the 2013 annual review report.

3. Overall assessment of the inventory

10. Table 3 contains the ERT's overall assessment of the annual submission of Austria. For recommendations for improvements for specific categories, please see the paragraphs cross-referenced in the table.

Table 3
The expert review team's overall assessment of the annual submission

Issue	*Expert review team assessment*	*General findings and recommendations*
The ERT's findings on completeness		
Annex A sources[a]	Complete	Mandatory: none
		Non-mandatory: none
Land use, land-use change and forestry[a]	Not complete	Mandatory: the carbon stock changes in living biomass and mineral soils for "forests not in yield" for forest land remaining forest land (see paras. 57 and 58 below)
		Non-mandatory: "NE" is reported for: all pools for wetlands remaining wetlands; all pools except dead organic matter for settlements remaining settlements; and CO_2 net emissions/removals for harvested wood products
		The ERT encourages the Party to estimate and report emissions from all non-mandatory pools

Issue	*Expert review team assessment*	*General findings and recommendations*
KP-LULUCF	Complete	
The ERT's findings on recalculations and time-series consistency		
Transparency of recalculations	Sufficiently transparent	
Time-series consistency	Sufficiently consistent	
The ERT's findings on QA/QC procedures	Sufficient	Austria has elaborated a QA/QC plan and has implemented tier 1 QA/QC procedures in accordance with that plan. The ERT commends Austria for its good QA/QC work. The ERT thanks Austria for its responsiveness during the review Please see paragraphs 13, 14 and 38 below for category-specific recommendations
The ERT's findings on transparency	Sufficiently transparent	The ERT found a need for transparency to be enhanced in some places (e.g. in the methodological descriptions in the NIR in the energy, industrial processes and LULUCF sectors) and the correction of some minor errors in the NIR and the CRF tables, as explained in the sectoral chapters below Please see paragraphs 30, 31, 36, 37, and 59 below for category-specific recommendations

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, CRF = common reporting format, ERT = expert review team, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NE = not estimated, NIR = national inventory report, QA/QC = quality assurance/quality control.

[a] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the Intergovernmental Panel on Climate Change (IPCC) *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* or the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*).

4. Description of the institutional arrangements for inventory preparation, including the legal and procedural arrangements for inventory planning, preparation and management

Inventory planning

11. The NIR described the national system for the preparation of the inventory. As indicated by Austria in its NIR, there were no changes to the inventory planning process. The description of the inventory planning process, as contained in the report of the individual review of the annual submission of Austria submitted in 2013,[3] remains relevant.

Inventory preparation

12. Table 4 contains the ERT's assessment of Austria's inventory preparation process.

[3] FCCC/ARR/2013/AUT, paragraphs 10–13.

Table 4
Assessment of inventory preparation by Austria

Issue	*Expert review team assessment*	*ERT findings and recommendations*
Key category analysis		
Was the key category analysis performed in accordance with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	Yes	Level and trend analysis performed, including and excluding LULUCF
Approach followed?	Both tier 1 and tier 2	
Were additional key categories identified using a qualitative approach?	No	
Has the Party identified key categories for activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol following the guidance on establishing the relationship between the activities under the Kyoto Protocol and the associated key categories in the UNFCCC inventory?	Yes	All activities under Article 3, paragraph 3, of the Kyoto Protocol are key categories
Does the Party use the key category analysis to prioritize inventory improvements?	Yes	
Assessment of uncertainty analysis		
Approach followed?	Both tier 1 and tier 2	
Was the uncertainty analysis carried out in accordance with the IPCC good practice guidance and the IPCC good practice guidance for LULUCF?	Yes	A tier 2 uncertainty analysis for all categories was carried out for the 2014 annual submission
Quantitative uncertainty (including LULUCF)	Level = 25.7% Trend = 3.0%	
Quantitative uncertainty (excluding LULUCF)	Level = 6.1% Trend = 2.2%	

Abbreviations: ERT = expert review team, IPCC good practice guidance = Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPCC good practice guidance for LULUCF = IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, LULUCF = land use, land-use change and forestry.

13. The ERT noted that the last row in table 10 of the NIR "Tier 1 uncertainty calculation and reporting according IPCC (2000) Table 6.1. – including LULUCF"

indicates the sums to be for "excluding LULUCF", and recommends that the Party correct this to "including LULUCF".

14. In response to a question raised by the ERT during the review regarding whether Austria has performed a tier 2 uncertainty analysis as recommended by the previous ERT, Austria responded that a tier 2 analysis has been performed for all categories; however, the detailed results are presented for the key categories only in NIR tables 11 and A157 for reasons of clarity. The ERT recommends that Austria correct the column headings in NIR tables 9–11 as well as tables A155–A157 accordingly in the annual submission.

Inventory management

15. There were no changes to the inventory management process carried out by the Party for the 2014 annual submission, as indicated by the Party in its NIR. The description of the inventory management process, as contained in the report of the individual review of the annual submission of Austria submitted in 2013,[4] remains relevant.

5. Follow-up to previous reviews

16. The ERT noted that Austria has implemented most of the recommendations made in the previous review report and included information on these in the NIR (tables 291 and 292). The major improvements include: the improvement of the transparency of the emission estimates and documentation in all sectors; and the inclusion of emissions from charcoal consumption (CH_4 and N_2O) and production (CH_4), and the harmonization of the data in the CRF tables with the International Energy Agency (IEA) data in the energy sector.

17. Recommendations from previous reviews that have not yet been implemented, as well as issues the ERT identified during the 2014 annual review, are discussed in the relevant sectoral chapters of the report and in table 9 below.

B. Energy

1. Sector overview

18. The energy sector is the main sector in the GHG inventory of Austria. In 2012, emissions from the energy sector amounted to 59,691.53 Gg CO_2 eq, or 74.6 per cent of total GHG emissions. Since 1990, emissions have increased by 7.7 per cent. The key drivers for the rise in the emissions are the increase in emissions from road transportation and the increase in the use of natural gas in manufacturing industries and construction. Within the sector, 36.2 per cent of the emissions were from transport, followed by 26.1 per cent from manufacturing industries and construction, 20.9 per cent from energy industries and 15.9 per cent from other sectors. Fugitive emissions from fuels (almost all oil and natural gas) accounted for 0.8 per cent. The remaining emissions, which amount to less than 0.1 per cent, were from the subcategory other (energy).

19. Austria has made recalculations between the 2013 and 2014 annual submissions for this sector. The two most significant recalculations made by the Party between the 2013 and 2014 annual submissions were in the following categories: manufacturing industries and construction; and other sectors. The recalculations were made in response to recommendations made in the 2013 annual review report, following changes in activity data (AD) and emission factors (EFs). Compared with the 2013 annual submission, the recalculations slightly increased emissions in the energy sector for 2011 by 13.09 Gg CO_2

[4] FCCC/ARR/2013/AUT, paragraph 15.

eq (0.02 per cent), and increased total national emissions for that year by 0.02 per cent. The recalculations were adequately explained. These recalculations affect the entire time series of the energy sector, their impact ranging from –0.5 per cent in 2006 to +0.3 per cent in 2009. The years 1990 and 2011 show an increase of 0.1 and 0.02 per cent, respectively. The main recalculations took place in the following categories:

(a) CO_2 emissions from other sectors (average annual impact (i.e. 1990–2011 average), 0.3 per cent);

(b) CO_2 emissions from manufacturing industries and construction (average annual impact, 0.2 per cent);

(c) CO_2 emissions from energy industries (average annual impact, –0.2 per cent).

2. Reference and sectoral approaches

20. Table 5 provides a review of the information reported under the reference approach and the sectoral approach, as well as comparisons with other sources of international data.

Table 5
Review of reference and sectoral approaches

Issue	*Expert review team assessment*	*Paragraph cross references*
Difference between the reference approach and the sectoral approach	Energy consumption: −14.74 PJ, −1.77% CO_2 emissions: 2,285.72 Gg CO_2, 3.92%	
Are differences between the reference approach and the sectoral approach adequately explained in the NIR and the CRF tables?	Yes	See paragraphs 21–23 below
Are differences with international statistics adequately explained?	Yes	See paragraph 24 below
Is reporting of bunker fuels in accordance with the UNFCCC reporting guidelines?	Yes	See paragraph 25 below
Is reporting of feedstocks and non-energy use of fuels in accordance with the UNFCCC reporting guidelines?	Yes	

Abbreviations: CRF = common reporting format, NIR = national inventory report, UNFCCC reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories".

Comparison of the reference approach with the sectoral approach and international statistics

21. The difference between the reference and sectoral approaches with regard to solid fuels is 19.5 per cent for energy consumption and 49.4 per cent for CO_2 emissions. In response to a question raised by the ERT during the review regarding an increase in the difference for solid fuels relative to the previous year, Austria explained that although the difference expressed as a percentage is increasing (from approximately 46 per cent to 49 per cent), the absolute difference between the two approaches is decreasing due to changes in hard coal and coke consumption in the industrial processes sector. The ERT notes this

explanation and encourages Austria to further clarify these differences in its annual submission.

22. The difference between the two approaches varies across the time series, from 2.4 per cent in 2009 to 8.0 per cent in 1998. Explanations for the fluctuations in the differences between the two approaches over the time series are provided in the NIR, with a comprehensive quantification of the differences. The differences are attributed to, among other things, the inclusion in the reference approach of process emissions from blast furnaces and steel production for solid fuels, emissions from plastic waste incineration and an aggregation of several fuel types for liquid fuels; while the sectoral approach considers waste as an additional fuel type and uses sector/plant-specific net calorific values. When these factors are considered, the actual difference between the sectoral and reference approaches reduces to –0.22 per cent for 2012. The ERT agrees with the analysis conducted by Austria and acknowledges the level of detail provided in the NIR to explain the differences.

23. The previous annual review report recommended that Austria report the carbon content of gasoil and diesel oil in the reference approach in such a way that biofuels are considered from the year 2005 onwards; thus, the biogenic carbon from biofuels is accounted for separately. The ERT commends Austria for implementing this improvement.

24. The previous annual review report recommended that Austria harmonize the fuel consumption data for domestic aviation and navigation between the CRF tables, for which a bottom-up approach is used, and the IEA reports, which rely on a top-down approach. In response to a question raised by the ERT during the review requesting an update regarding this process, Austria stated that the split between national and international jet kerosene for civil aviation has been reported to Statistik Austria, which plans to revise these data in its next submission to IEA. The ERT observed that, for 2012, Austria reported jet kerosene consumption of 641.43 TJ for civil aviation, whereas a figure of 1,247 TJ was noted in the IEA data. In response to the draft review report, Austria explained that military jet kerosene is also included in the IEA data. Once domestic jet kerosene from civil aviation 641 TJ for 2012) is added to military jet kerosene (626 TJ for 2012), the total (1,267 TJ) is close to the IEA value of 1,247 TJ. The ERT recommends that Austria include this explanation in its NIR. Therefore, the difference between the IEA data and the data in CRF table 1.C for 2012 remains significant (94 per cent). The differences regarding diesel oil in navigation for 2012 were almost eliminated. The ERT welcomes the Party's efforts to harmonize these data and recommends that Austria continue these efforts and report the results in its NIR. The ERT also encourages Austria to strive to improve the consistency of the data reported to all international organizations.

International bunker fuels

25. The ERT observed in the NIR an inconsistency in the trend of N_2O emissions related to marine bunkers during the period 1990–2012 (a decrease of 4 per cent), in comparison with the trends of CO_2 and CH_4 emissions, which showed an increase of 18 per cent and 17 per cent, respectively, as well as an increase in AD (16 per cent). The ERT also identified, in the CRF tables and in the NIR (table 28), a mismatch for the data series of CH_4 and N_2O emissions between the two sources. During the review, the ERT asked Austria to check the CRF tables and the data in the NIR and inform the ERT about the results of this examination. In addition, the ERT asked Austria to explain why the trend in emissions of CH_4 (in the CRF tables) is different from the AD and CO_2 and N_2O emission trends. In response to questions raised by the ERT during the review, Austria replied that the values in the CRF tables for international marine bunkers are correct, but the headings for CH_4 and N_2O emissions in the NIR (table 28) have been switched in error and that this will be corrected in the next NIR. With regard to the difference in the trends, Austria responded that the differences reflect changes in the fleet and fuel composition. The ERT recommends

that Austria improve its quality assurance/quality control (QA/QC) procedures in order to improve the consistency of data between the CRF tables and the NIR in its annual submission.

Feedstocks and non-energy use of fuels

26. No problems were identified.

3. Key categories

Stationary combustion: solid fuels – CH_4

27. Austria reported CH_4 emissions from coke production in the iron and steel industry under manufacturing industries and construction, as opposed to under the category manufacture of solid fuels and other energy industries. The ERT noted that Austria continued to report CH_4 emissions from solid fuels and other energy industries, as "NO" (not occurring) despite the recommendation made in the previous review report that Austria use the notation key "IE" (included elsewhere) to reflect that emissions from coke production are included elsewhere. In response to questions raised by the ERT during the review regarding this issue, Austria stated that it will consider the use of the notation key "IE" for manufacture of solid fuels and other energy industries in its annual submission. The ERT welcomes Austria's positive response and reiterates the recommendation made in the previous review report that the Party use the appropriate notation key, "IE", for all emissions from coke production in its annual submission.

Stationary combustion: liquid and solid fuels – CO_2

28. The previous ERT noted that CO_2 emissions from blast furnace gas and use of residual fuel oil in iron and steel production were not transparently reported in the following energy sector subcategories: manufacture of solid fuels and other energy industries; manufacturing industries and construction; and solid fuel transformation. Austria provided the previous ERT with mass balance information on these activities and the ERT concluded that the mass balance and its verification procedure demonstrated no potential underestimation of emissions. The previous review report strongly recommended that the Party include the carbon mass balance in the form of a process flow diagram in the NIR. The current ERT commends Austria for including the mass balance for the integrated iron and steel plant in its 2014 annual submission, and encourages Austria to further improve the transparency of its reporting by incorporating the numeric values to the process flow diagram provided in the NIR.

4. Non-key categories

Road transportation: liquid fuels – CH_4 and N_2O

29. In its NIR, Austria differentiates road transportation by means of transportation (passenger cars, light duty vehicles, heavy duty vehicles, mopeds and motorcycles), and quantifies these emissions in Gg CO_2 eq. The ERT noted that in table 72 of the NIR, entitled "Implied emission factors of mopeds 1999–2012", the N_2O EFs are missing from the year 1999 onwards. In response to a question raised by the ERT during the review as to why these implied emission factors (IEFs) are missing, Austria stated that the N_2O emissions of mopeds have been calculated and included in the road transportation figures for the years 1999–2012. In addition, Austria noted that its model differentiates between mopeds with and without catalytic converters. Austria explained that the problem in reporting the values for the EFs stems from the fact that the emissions are very small (0.0001 kt for 2012) and a transcription error occurred. Austria provided the ERT with a table with the correct values for the IEFs and the emissions from mopeds and stated that this information will be included in the next NIR. The ERT welcomes the provision of the

new information and notes that this transcription error in the EFs does not lead to an underestimation of emissions. The ERT also notes that the EFs provided for the years 1990–1998 are different from the EFs for these years that appear in the NIR. The ERT recommends that Austria improve its QA/QC procedures in order to avoid such errors in its annual submission.

30. Austria has reported CH_4 and N_2O emissions associated with liquefied petroleum gas (LPG), gaseous fuels and biomass use, from road transportation, as "IE". The previous ERT recommended that Austria revise the modelling approach used to allow for the estimation of CH_4 and N_2O emissions from biomass separately and to report thereon in its annual submission. In response to questions raised by the current ERT during the review regarding an update of this issue, Austria explained that it plans to report CH_4 and N_2O emissions from LPG and natural gas separately in its annual submission. However, it does not plan to separate emissions from biomass fuels because most of the fuels are used in blended diesel and gasoline and, therefore, a separation of CH_4 and N_2O emissions from these fuels would be "artificial". Austria believes that the manner in which emissions from gasoline and diesel cars are currently reported according to fuel is more transparent. The ERT examined reports from other reporting Parties included in Annex I to the Convention and found that many Parties do report CH_4 and N_2O emissions from biomass in road transportation separately. The ERT believes that reporting these emissions separately will enhance transparency and ensure the comparability of emissions from fuels used in transport across reporting Parties and time. Therefore, the ERT reiterates the recommendation made in the previous review report that Austria report CH_4 and N_2O emissions from biomass separately in its annual submission.

Navigation: liquid fuels – CO_2, CH_4 and N_2O

31. The ERT observed an inconsistency in the emission trends for domestic navigation (table 76 in the NIR). Specifically, during the period 1990–2012, the CH_4 emissions show a sharp decrease of 45 per cent, while CO_2 and N_2O emissions fluctuate and decrease only by 18 per cent and 20 per cent, respectively (along with the AD, which decreased by 19 per cent). During the review, the ERT asked Austria for an explanation of the discrepancy in the emission trends of the CH_4 emissions versus the CO_2 and N_2O emissions as well as versus the AD. Austria responded initially that these differences reflect changes in the fleet and fuel combination. However, in response to the ERT's graphical presentation of the time-series discrepancy, Austria provided additional explanations and supporting data which demonstrate that, during the period under review, there was a significant technological improvement in gasoline engines used for domestic navigation and that the approximately 70 per cent share of gasoline consumption in inland navigation (private, working and passenger boats) is much higher than the share of diesel oil, which is mainly used in freight transport on the Danube River (the bottom-up approach is based on yearly transport volumes (t/km) on the Danube River derived from national statistics and therefore strongly fluctuating). As CH_4 emissions are more dominant for gasoline engines than for diesel oil engines, the CH_4 emission trend mainly represents the change in gasoline engines, whereas for the other gases, the emission trend reflects both types of engine. The ERT commends Austria for this detailed response and accepts this explanation. In order to enhance the transparency of the reporting, the ERT recommends that Austria include supporting material and explanations in its NIR, whenever inconsistencies in trends of emissions or IEFs occur.

Coal mining and handling: solid fuels – CH_4

32. Austria has not reported CH_4 fugitive emissions from coal production from 2007 onwards, as production of coal stopped in Austria in that year. The previous ERT noted that CH_4 emissions are likely to occur even after production has stopped. The previous ERT welcomed Austria's initiative to conduct a trial GHG inventory that follows the

Intergovernmental Panel on Climate Change (IPCC) *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (hereinafter referred to as the 2006 IPCC Guidelines) and to gather data on abandoned coal mines. The previous review report encouraged Austria to report the results of the initiative. In response to a request for an update on this issue from the current ERT, Austria responded that as reporting on abandoned underground coal mines is only required under the 2006 IPCC Guidelines, emissions from this category will be reported in the 2015 annual submission. Austria also informed the ERT that requests have been sent to the responsible ministry to clarify the number of abandoned coal mines and that the Party is awaiting its response. The current ERT welcomes the progress made by the Party on this initiative.

Other (energy) – CH_4

33. The ERT noted the AD and emission data provided in table 98 of the NIR and the documentation of the methodology used for estimating CH_4 emissions from charcoal production. During the review, the ERT asked for further explanations as to why the estimated amounts of charcoal remain constant at a level of 1,000 t for the years 1990–2004. In response, Austria explained that charcoal is mainly used for barbecues in Austria and production occurs only on a very small scale. For the most recent years (2005–2012) Austria uses the data from Statistik Austria (national energy balance) to calculate the emissions from charcoal production. For the years 1990–2004, an average production amount of 1,000 t was assumed, as the national energy balance only provides data for this fuel category starting from 2005. The Party also stated that, although the IEA Joint Questionnaire figures do not show indigenous production for the years prior to 2001, Austria believes that it is unlikely that these data reflect the actual situation. From the Austrian perspective, it is possible that in this case rounding differences may also have occurred. In addition, charcoal has been produced traditionally within small communities for many decades. Therefore, Austria concluded that it is a reasonable and conservative assumption to take a constant charcoal production of 1,000 t for the years 1990–2004 (approximately the level of 2005) instead of relying on IEA data showing an indigenous production of zero for this period. The ERT notes the explanation provided by Austria and recommends that the Party further investigate the production of charcoal and improve the related estimates of CH_4 fugitive emissions for the years 1990–2004 in order to increase the accuracy of its reporting.

C. Industrial processes and solvent and other product use

1. Sector overview

34. In 2012, emissions from the industrial processes sector amounted to 10,877.24 Gg CO_2 eq, or 13.6 per cent of total GHG emissions, and emissions from the solvent and other product use sector amounted to 334.56 Gg CO_2 eq, or 0.4 per cent of total GHG emissions. Since 1990, emissions have increased by 8.7 per cent in the industrial processes sector, and decreased by 34.6 per cent in the solvent and other product use sector. The key drivers for the rise in emissions in the industrial processes sector are the increase in emissions from iron and steel production, and refrigeration and air-conditioning equipment. Within the industrial processes sector, 50.4 per cent of the emissions were from metal production, followed by 27.1 per cent from mineral products, 16.5 per cent from consumption of halocarbons and SF_6 and 6.1 per cent from chemical industry. Emissions from other production and other (industrial processes) were reported as "NA" (not applicable).

35. Austria has made recalculations between the 2013 and 2014 annual submissions for the industrial processes sector. The most significant recalculations made by Austria between the 2013 and 2014 annual submissions were in the following categories: metal production (95.47 Gg CO_2 eq) and chemical industry (26.15 Gg CO_2 eq). The

recalculations were made following changes in AD (metal production) and in order to rectify identified errors (chemical industry). Compared with the 2013 annual submission, the recalculations decreased emissions in the industrial processes sector by 121.63 Gg CO_2 eq (1.1 per cent), and decreased total national emissions by 0.1 per cent. The recalculations were adequately explained.

2. Key categories

Lime production – CO_2

36. The ERT welcomes the more detailed description of methodological issues in the NIR, which has improved the transparency of the estimates for this category. However, the ERT found that the information is still not completely transparent regarding the accounting and reporting of CO_2 emissions from the sugar production process in order to transparently demonstrate that all CO_2 emissions are appropriately reported. The ERT notes the information provided in response to questions raised by the ERT during the 2013 review and accepts the conclusion of the previous ERT that all CO_2 emissions are accounted for and that there is no potential underestimation of emissions. However, the ERT reiterates the recommendation made in the previous review report that Austria include in the NIR a mass balance with data on the lime produced, the CO_2 produced by calcination, the coke consumed and the mass of calcium carbonate ($CaCO_3$) produced to transparently document the process. The ERT also reiterates the recommendation made in the previous review report that the Party include a description of the use of the total amount of $CaCO_3$ obtained.

Consumption of halocarbons and SF_6 – HFCs and PFCs[5]

37. Austria has reported actual emissions of HFC-23 and perfluoropropane (C_3F_8) from commercial refrigeration for the years 1995–2012 as "IE", while in the previous annual submission those emissions were reported with values. CRF table 9(a) does not contain information on the allocation of the reported emissions. In response to questions raised by the ERT during the review, Austria explained that changes are due to a revision of the emission calculation model. In the approach applied by Austria, refrigerants are combined in a group of refrigerants with similar global warming potential. Emissions of HFC-23 and C_3F_8, which occur in small quantities only, are not disaggregated but are included in the emissions of the three main components: HFC-32 (R32), HFC-125 (R125) and HFC-134a (R134a). Therefore, emissions of HFC-23 in the category refrigeration and air-conditioning equipment are reported as "IE". The ERT considers that this information is not fully transparent and recommends that Austria include a more detailed and transparent description in its annual submission, with a focus on providing information as to where those emissions are included.

38. Austria reported in its NIR that the data for domestic refrigeration were based on extrapolation, but the ERT noted that these data were collected only for a single year (1993). In response to questions raised by the ERT during the review, Austria explained that R134a was introduced at the end of 1993 and replaced by isobutane (C_4H_{10}) one year later. Based on this information, the following shares of R134a in imported refrigerants were used in the calculation: 100 per cent in 1993; 1 per cent from 1994 to 2005; and 0 per cent from 2006 onwards. Austria also informed the ERT that the summary in table 129 of the NIR does not reflect these years and values correctly and that the table will be corrected in the 2015 annual submission. The ERT recommends that Austria correct the description of the data source used for domestic refrigeration in its NIR.

[5] PFC emissions from this category are not key. However, since all issues related to this category are discussed as a whole, the individual gases are not assessed in separate sections.

39. The ERT noted that Austria did not provide data on the assumptions made during the estimation of emissions of fluorinated gases, such as the initial charges and the lifespan of different types of equipment. In response to a question raised by the ERT during the review, Austria provided detailed data and reference material and explained that, for reasons of confidentiality, detailed information cannot be published in the NIR. However, the ERT encourages Austria to provide general aggregated information on the initial charges and lifespan of the equipment, while maintaining the confidentiality of sensitive data.

D. Agriculture

1. Sector overview

40. In 2012, emissions from the agriculture sector amounted to 7,499.03 Gg CO_2 eq, or 9.4 per cent of total GHG emissions. Since 1990, emissions have decreased by 12.4 per cent. The key driver for the fall in emissions is the decrease in livestock numbers and the lower amounts of nitrogen (N) fertilizers applied to agricultural soils. Within the sector, 42.6 per cent of the emissions were from enteric fermentation, followed by 40.9 per cent from agricultural soils. Manure management accounted for 16.6 per cent, while emissions from field burning of agricultural residues were less than 0.1 per cent. Emissions from rice cultivation and prescribed burning of savannas were reported as "NO".

41. Austria has made recalculations between the 2013 and 2014 annual submissions for this sector. The most significant recalculation made by Austria between the 2013 and 2014 annual submissions was in the following category: manure management. The recalculation was made following changes in AD. Compared with the 2013 annual submission, the recalculation increased emissions in the agriculture sector by 1.31 Gg CO_2 eq (0.02 per cent), and increased total national emissions by 0.002 per cent. The recalculations were adequately explained.

42. In response to recommendations made in previous review reports, Austria has provided a table with all country-specific data (e.g. gross energy intake, animal waste management system (AWMS) distribution, volatile solids excretion, methane conversion factor (MCF), N excretion, N losses) for all reporting years, including a short indication of the sources of such data. The Party has also improved the transparency and accuracy of the background information provided in the CRF tables (e.g. AWMS allocation). The ERT commends Austria for these improvements.

2. Key categories

Enteric fermentation – CH_4

43. Austria has reported CH_4 emissions from enteric fermentation using the tier 2 method for cattle (dairy and non-dairy) and the tier 1 method for sheep, goats, horses and "other animals" (i.e. furred game, mainly deer). For poultry, since there are no IPCC default values available, the gross energy intake and MCFs from Switzerland were used. Since the agricultural practices of both countries are very similar, the ERT agrees with such an approach.

44. Cattle emissions are a key category due to their contribution to the total GHG emissions in Austria (3.7 per cent in 2012). In this category, the value for the methane conversion rate Y_m (0.06 +/–8.3%) was taken from the value for "all other cattle" provided in the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance), with the justification that there are few, if any, feedlot cattle with a high-energy diet (i.e. with 90 per cent or more of their diet in the form of concentrates) in Austria. Country-

specific values for the gross energy intake were applied and separate estimates were made for dairy and non-dairy cattle, under which separate estimates were made for conventional and organic diets. Since no major changes in the diet of non-dairy cattle occurred in the period 1990–2012, a constant value for the gross energy intake (72–167 MJ/head/day) was used for the whole time series. The ERT considers that the constant value is acceptable, but encourages Austria to revise the value if a change in the diet occurs.

45. The previous review report recommended that Austria ensure the consistency between the data for the animal weight for dairy cattle presented in CRF tables 4.A and 4.B(a) and the data effectively used in the model for the calculation of CH_4 emissions. In response to that recommendation, Austria has explained in its NIR that the constant value of 700 kg, which is presented in the CRF tables, is in line with the Austrian calculation model, which applies the average weight of the dominant Austrian breed "Fleckvieh" for all reported years. According to the national model and expert judgement,[6] the calculation using average animal masses of 700 kg is the best approach for average milk yields lower than 7,000 kg/head/year in Austria. Austrian dairy cattle show average milk yields from 3,791 to 6,418 kg/head/year in 1990 and 2012, respectively, with a dominance of the "Fleckvieh" breed. The ERT agrees with the explanation, and notes emissions are not underestimated.

Manure management – N_2O and CH_4

46. An IPCC tier 2 method was applied to estimate CH_4 emissions from manure management for cattle and swine. CH_4 emissions from sheep, goats, poultry and other animals were estimated using a tier 1 method. For the estimation of N_2O emissions, an IPCC tier 1 method was used. Austria has made recalculations due to updates in the feedstock balance, showing smaller amounts of digested manure. As a consequence, higher emissions of CH_4 and minor changes in N_2O emissions were estimated in recent years.

47. Following a recommendation made in the previous review report, Austria has presented the distribution of the livestock manure per animal subcategory in different AWMS. To create a plausible time series, the AWMS distribution for 1990 was partly adopted and changes to the year 1990 were derived from a study and an expert opinion in June 2008. The AWMS data from 2005 to 2008 were derived by linear extrapolation. From 2008 onwards the AWMS distribution is held constant in order to prevent implausible trends by the end of the first commitment period under the Kyoto Protocol. In response to questions raised by the ERT during the review, Austria informed the ERT that there were no other surveys available before the end of the first commitment period, and, therefore, the updated AWMS presented in the current NIR reflect the situation in Austria better than the IPCC default method. The ERT considers that the AWMS distribution is acceptable, but encourages Austria to undertake a survey, when appropriate.

48. In response to a recommendation made in the previous review report, Austria has provided additional information on the method used to derive the share of manure digested in biogas plants. According to the NIR, only a small part of the energy production is based on animal manure (mainly cattle, swine and chickens) and there is a decrease in the average amounts of digested manure, due to provisions of the Eco Electricity Act, which promotes the use of feedstock with high energy content (e.g. corn). The ERT commends Austria for the new information presented in the NIR.

Direct and indirect soil emissions – N_2O

49. Austria uses IPCC tier 1a, tier 1b and country-specific methodologies for the estimation of N_2O emissions from agricultural soils. In particular, Austria has established

[6] NIR, page 292, communication from Dr. Erich Potsch.

an N-flow model, with a link between the ammonia (NH_3) and N_2O emissions inventory, which enables the Party to use more accurate country-specific data for $Frac_{GASM}$ (fraction of animal manure that is volatized as NH_3 and nitrogen oxides (NO_X)) and $Frac_{GASF}$ (fraction of N lost through gaseous emissions of NH_3 and NO_X).

50. In response to a recommendation made in the previous review report, the Party has included an additional description of the Austrian N-flow model in the NIR. The model follows a recommendation of the *EMEP/EEA Air Pollutant Emission Inventory Guidebook 2013*,[7] where NH_3 emissions from cattle and swine are estimated on the basis of the total ammoniacal nitrogen (TAN) instead of total N excretion. According to the NIR, the calculation addresses both N pools (N excretion and TAN) for the different stages of manure management (housing to storage to spreading) in terms of NH_3, NO_X and N_2O emissions and includes information of the total N amount within each relevant stage (N excretion) and the fraction of that amount that is present as TAN.[8] The ERT commends Austria for this additional information.

51. Austria also informed the ERT of specific research activities to establish a country-specific value for $Frac_{LEACH}$ (fraction of N input to soils that is lost through leaching and run-off). The first results indicate that this factor is considerably lower than the IPCC default value of 0.3 currently used. The final report is expected in the third quarter of 2014. The ERT welcomes such research and recommends that Austria report on the results in the annual submission.

E. Land use, land-use change and forestry

1. Sector overview

52. In 2012, net removals from the LULUCF sector amounted to 3,838.52 Gg CO_2 eq. Since 1990, net removals have decreased by 61.1 per cent. The key driver for the fall in removals is the decrease in the carbon stock in forest land remaining forest land. Within the sector, 4,487.04 Gg CO_2 eq of net removals were from forest land. Net emissions from cropland accounted for 250.10 Gg CO_2 eq, followed by 194.38 Gg CO_2 eq from other land, 87.95 Gg CO_2 eq from settlements and 74.84 Gg CO_2 eq from wetlands. The remaining 41.24 Gg CO_2 eq of net emissions were from grassland. Emissions from other (LULUCF) were reported as "NA", "NE" (not estimated).

53. Austria has made recalculations between the 2013 and 2014 annual submissions for this sector. The most significant recalculation made by Austria between the 2013 and 2014 annual submissions was in the forest land category. The recalculations were made mainly in response to changes in land area data due to the results of a new assessment on land-use changes and the revision of EFs, particularly for biomass and dead wood for land-use changes from and to forest land and for soil for land-use changes from wetlands. Compared with the 2013 annual submission, the recalculations increased removals in the LULUCF sector by 379.70 Gg CO_2 eq (10.9 per cent). The recalculations were adequately explained in the NIR.

54. The ERT commends the Party for providing definitions of all land-use categories and pools and information showing the relationship between the areas reported under both the Convention and the Kyoto Protocol, thereby improving the transparency of the reporting compared to the 2013 annual submission. The ERT also acknowledges the

[7] <http://www.eea.europa.eu/publications/emep-eea-guidebook-2013>.

[8] Detailed information on the parameters and methods used is provided in Austria's "Informative Inventory Report 2014", chapter 6 (Umweltbundesamt, 2014).

improvements in the CRF tables, in particular the inclusion of changes in the use of notation keys related to biomass burning and the reporting of AD and emissions for organic soils in CRF table 5.C, as recommended in the previous review report.

55. In its 2014 annual submission, Austria has prepared the uncertainty assessment using the tier 2 approach by applying the Monte Carlo analysis for the entire LULUCF sector and time series. The ERT noted that the uncertainties of the sector are large and that the majority (70 per cent) of the total LULUCF uncertainty can be attributed to the carbon stock changes in the litter/soil pool in forest land remaining forest land, which is estimated using the YASSO 07 simulation model. The ERT reiterates the recommendation made in the previous review report that the Party use the results of the uncertainty analysis to prioritize the aspects of the inventory that require refinement, in order to improve the accuracy and possibly to reduce the overall uncertainty of the LULUCF inventory.

56. As also noted in the previous review report, the trend in net CO_2 emissions/removals exhibits large inter-annual changes across the entire time series. In response to questions raised by the ERT during the review, Austria explained that part of the inter-annual variations are due to the harvest of high biomass stocks in certain years, for example between the years 2003 and 2004 for the cropland category, particularly for the subdivision perennial remaining perennial and annual remaining annual. Other step changes in the time series are explained by the changes in land-use areas between the different national forest inventory (NFI) observation periods (1985–1988, 1989–1994, 1995–2001, 2002–2008 and 2009–2012) due to the sampling intervals between the inventory years. The ERT reiterates the encouragement made in the previous review report that Austria further develop a methodology to derive more detailed information regarding the annual changes in land-use areas to ensure a more accurate estimation of emission/removal trends across the time series for future annual submissions.

2. Key categories

Forest land remaining forest land – CO_2

57. In the CRF tables, Austria reported the living biomass carbon stock changes for "forests not in yield" as "NA". It is mentioned in the NIR that in the NFI 2007/2009 an assessment of the standing stocks in these non-productive forests was carried out, but no information is provided in the NIR to justify that the activity does not result in emissions or removals. In response to a question raised by the ERT during the review, Austria explained that the correct notation key should be "NE" and that the information on the carbon stock changes would be available with the reassessment of the stocks in the next full NFI. The ERT reiterates the recommendation made in the previous review report that the Party provide estimates of the carbon stock changes for "forests not in yield" when the new NFI data become available and use the correct notation key.

58. Austria also reported the carbon stock changes in mineral soils for "forests not in yield" using the notation key "NO" in the CRF tables. However, no information is provided in the NIR to justify the underlying assumption that the carbon stock changes for this pool do not occur within the country. In response to questions raised by the ERT during the review, Austria explained that the notation key should be "NE". The ERT recommends that the Party provide estimates of the carbon stock changes in mineral soils for "forests not in yield" using the best available data. Alternatively, the Party should use the appropriate notation key and provide information justifying its use in its annual submission.

59. Austria calculated the carbon stock changes in mineral soils for "forests in yield" using the YASSO 07 simulation model. This model does not distinguish between soil horizons and accounts for the litter layer and the total soil carbon pool. The method used to

estimate the carbon stock changes in dead wood is also described in the NIR; however, it is not clear from the description how these carbon stock changes were reported in the dead organic matter pool (which includes litter and dead wood) and in the soil categories in the CRF tables. In response to a question raised by the ERT during the review, the Party explained the reporting method. The ERT recommends that Austria enhance the description of the method used to report these pools separately in its annual submission, for example by including references in the documentation box in the CRF tables, in order to improve the transparency of the reporting.

Cropland remaining cropland – CO_2

60. For the estimates of the changes of carbon stocks in biomass for annual cropland converted to perennial cropland Austria has applied equation 3.3.8 of the IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry* (hereinafter referred to as the IPCC good practice guidance for LULUCF), according to which a tier 1 annual growth of 2.1 t C/ha/year for perennial cropland was assumed for each year. It is also indicated in the NIR that perennial cropland in Austria is divided into three groups (vines, orchards and house gardens; Christmas trees; and energy crops) with tier 2 country-specific values for the annual growth rates for the second and third categories. The ERT also noted that improvements related to the development of country- and species-specific values are planned for the first group. In response to a question raised by the ERT during the review related to the use of IPCC default values, the Party expressed the impossibility of distinguishing between the categories of perennial cropland. The ERT welcomes the planned improvements and encourages Austria to further develop a methodology to distinguish between categories in order to apply country-specific values for future annual submissions.

F. Waste

1. Sector overview

61. In 2012, emissions from the waste sector amounted to 1,657.00 Gg CO_2 eq, or 2.1 per cent of total GHG emissions. Since 1990, emissions have decreased by 53.8 per cent. The key driver for the decrease in emissions is the application of waste management policies. Within the sector, 72.5 per cent of the emissions were from solid waste disposal on land, followed by 17.5 per cent from wastewater handling. Other (waste) accounted for 9.9 per cent of emissions. The remaining 0.1 per cent were from waste incineration.

62. The Party has made recalculations between the 2013 and 2014 annual submissions for this sector. The most significant recalculation made by Austria between the 2013 and 2014 annual submissions was in the following category: solid waste disposal on land. The recalculation was made following changes in AD, mainly for landfill gas recovery. Compared with the 2013 annual submission, the recalculations increased emissions in the waste sector by 28.64 Gg CO_2 eq (1.7 per cent), and increased total national emissions by 0.03 per cent.

63. Improvements in comparison with previous annual submissions have been made in terms of enhancing the reporting on AD (e.g. landfill gas recovery). The ERT commends the Party for this improvement.

2. Key categories

Solid waste disposal on land – CH_4

64. The ERT expresses its appreciation regarding the improvements in the transparency of Austria's reporting, particularly regarding the implementation of the recommendation

made in the previous review report relating to the time-series information on degradable organic carbon and the methane generation potential of non-residual waste. The QA/QC procedures established for the waste inventory (as described in section 8.1.4 of the NIR) in combination with regulations implemented on the reporting of waste provide a firm basis for the calculation of solid waste emissions.

65. In response to a recommendation made in the previous review report, Austria has taken the values for CH_4 recovery for the period 2008–2012 directly from the study conducted by Umweltbundesamt (2013b) for the 2014 annual submission. As these values already consider the changing methane concentration, no extra calculations had to be made and, hence, the use of assumptions is no longer necessary.

3. Non-key categories

Wastewater handling – CH_4

66. The ERT welcomes the implementation of the recommendation made in the previous review report regarding the provision of an explanation for the use of the methane correction factor value of 0.27 in the NIR.

Waste incineration – CO_2, CH_4 and N_2O

67. The ERT welcomes the implementation of the recommendation made in the previous review report regarding the addition of background information to enhance the transparency of the reporting of the AD for clinical waste and waste oil.

G. Supplementary information required under Article 7, paragraph 1, of the Kyoto Protocol

1. Information on activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Overview

68. Table 6 provides an overview of the information reported and parameters selected by the Austria under Article 3, paragraphs 3 and 4, of the Kyoto Protocol.

Table 6
Supplementary information reported under Article 3, paragraphs 3 and 4, of the Kyoto Protocol

Issue	*Expert review team assessment, if applicable*	*Findings and recommendations*
Assessment of Austria's reporting in accordance with the requirements in paragraphs 5–9 of the annex to decision 15/CMP.1	Sufficient	
Activities elected under Article 3, paragraph 4, of the Kyoto Protocol	Activities elected: none	
Period of accounting		Commitment period accounting

Issue	*Expert review team assessment, if applicable*	*Findings and recommendations*
Austria's ability to identify areas of land and areas of land-use change in accordance with paragraph 20 of the annex to decision 16/CMP.1	Sufficient	

69. Chapter G.1 includes the ERT's assessment of the 2014 annual submission against the Article 8 review guidelines and decisions 15/CMP.1 and 16/CMP.1. In accordance with decision 6/CMP.9, Parties will begin reporting of KP-LULUCF activities in the submissions due by 15 April 2015 using revised CRF tables, as contained in the annex to decision 6/CMP.9. Owing to this change in the CRF tables for KP-LULUCF activities, and the change from the first commitment period to the second commitment period, paragraphs 70–74 below contain the ERT's assessment of the Party's adherence to the current guidelines for reporting and do not provide specific recommendations for reporting of these activities in the 2015 annual submission.

70. Based on the recommendations made in the previous review report, Austria has made significant improvements related to the inclusion of an uncertainty analysis for KP-LULUCF activities and a detailed assessment of the afforestation and reforestation, and deforestation activities under Article 3, paragraph 3, of the Kyoto Protocol (afforestation and reforestation, and deforestation NFI for 2011/2013). This detailed assessment of the NFI data was also carried out for the years 1989–1994 covered by the NFIs for 1986/1990 and 1992/1996 in order to provide better estimates for afforestation and reforestation, and deforestation activities that occurred on or after 1 January 1990. In response to a question raised by the ERT during the review on how the assessment was executed, the Party further explained the use of pairs of plots from the NFIs for 1989/1995 and 1990/1996, which were separately reassessed and then used for the calculation of the annual afforestation and reforestation, and deforestation rates of the first years since 1 January 1990. The ERT concludes that the approach used is in line with reporting method 1, as described in chapter 4 of the IPCC good practice guidance for LULUCF, and also with the requirement of decision 16/CMP.1.

71. Austria has reported that with the afforestation and reforestation, and deforestation NFI for 2011/2013 a thorough inspection of all afforestation and reforestation, and deforestation areas was carried out and areas previously accounted as afforestation and reforestation, and deforestation due to short time oscillations in activities below the legal time frames for accounting as afforestation or deforestation were deleted as afforestation and reforestation, and deforestation areas. In response to a question raised by the ERT during the review, Austria further explained the approach used and clarified the time period threshold required to show how harvesting or disturbances and replanting or regrowth are distinguished from deforestation, as required by paragraph 8(b) of the annex to decision 15/CMP.1. The ERT concludes that this approach is in line with the IPCC good practice guidance for LULUCF and recommends that Austria report the time period threshold in the next NIR in order to improve the transparency of the reporting.

Activities under Article 3, paragraph 3, of the Kyoto Protocol

Afforestation and reforestation – CO_2

72. Due to the new assessment results from the afforestation and reforestation, and deforestation NFI for 2011/2013, Austria included for the first time for these activities the biomass stock changes for trees and shrubs with a diameter at breast height of less than 5 cm. In response to a question raised by the ERT during the review, Austria clarified the methodology used for the estimation and reporting of the carbon stock changes. The ERT encourages Austria to include in the NIR more information on the methodology used to help explain the estimates in the annual submission in order to improve the transparency of the inventory.

73. In response to recommendations made in previous review reports, and following the availability of survey data from the afforestation and reforestation, and deforestation NFI for 2011/2013, Austria has estimated and reported the carbon stock changes for the dead wood pool, as well as the living biomass losses associated with afforestation of settlement areas. Austria also applied a conservative approach to determine the soil organic carbon stocks of drained water bodies, thereby avoiding an overestimation of carbon stocks in the mineral soil pool.

Deforestation – CO_2

74. In response to a recommendation made in the previous review report, Austria has estimated and reported the CO_2 emissions resulting from lime application to deforested cropland and grassland. The ERT concludes that the Party's reporting is consistent with the IPCC good practice guidance for LULUCF.

2. Information on Kyoto Protocol units

Standard electronic format and reports from the national registry

75. Austria has reported information on its accounting of Kyoto Protocol units in the required SEF tables, as required by decisions 15/CMP.1 and 14/CMP.1. The ERT took note of the findings included in the standard independent assessment report (SIAR) on the SEF tables and the SEF comparison report.[9] The SIAR was forwarded to the ERT prior to the review, pursuant to decision 16/CP.10. The ERT reiterated the main findings contained in the SIAR.

76. Information on the accounting of Kyoto Protocol units has been prepared and reported in accordance with decision 15/CMP.1, annex, chapter I.E, and reported in accordance with decision 14/CMP.1 using the SEF tables. This information is consistent with that contained in the national registry and with the records of the international transaction log (ITL) and the clean development mechanism registry and meets the requirements referred to in decision 22/CMP.1, annex, paragraph 88(a–j). The transactions of Kyoto Protocol units initiated by the national registry are in accordance with the requirements of the annex to decision 5/CMP.1 and the annex to decision 13/CMP.1. No discrepancy has been identified by the ITL and no non-replacement has occurred. The national registry has adequate procedures in place to minimize discrepancies.

Accounting of activities under Article 3, paragraph 3, of the Kyoto Protocol

77. Austria has reported information on its accounting of KP-LULUCF in the accounting table, as included in the annex to decision 6/CMP.3. Information on the

[9] The SEF comparison report is prepared by the international transaction log (ITL) administrator and provides information on the outcome of the comparison of data contained in the Party's SEF tables with corresponding records contained in the ITL.

accounting of KP-LULUCF has been prepared and reported in accordance with decisions 16/CMP.1 and 6/CMP.3.

78. Table 7 shows the accounting quantities for KP-LULUCF as reported by the Party and the final values after the review.

Table 7

Accounting quantities for activities under Article 3, paragraph 3, and, if any, activities under Article 3, paragraph 4, of the Kyoto Protocol, in t CO_2 eq

	2014 annual submission[a]		
	As reported	*Revised estimates*	*Final accounting quantity*[b]
Afforestation and reforestation			
Non-harvested land	−10 116 695		−10 116 695
Harvested land	NO		NO
Deforestation	3 329 969		3 329 969
Forest management	NA		NA
Article 3.3 offset[c]	NA		NA
Forest management cap[d]	11 550 000		NA
Cropland management	NA		NA
Grazing land management	NA		NA
Revegetation	NA		NA

Abbreviations: CRF = common reporting format, KP-LULUCF = land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, NA = not applicable, NO = not occurring.

[a] The values included under the 2014 annual submission are the cumulative accounting values for 2008, 2009, 2010, 2011 and 2012, as reported in the accounting table of the KP-LULUCF CRF tables for the inventory year 2012.

[b] The "final accounting quantity" is the quantity of Kyoto Protocol units that the Party shall issue or cancel under each activity under Article 3, paragraph 3, and paragraph 4, if relevant, based on the final accounting quantity in the 2014 annual submission.

[c] "Article 3.3 offset": for the first commitment period, a Party included in Annex I to the Convention that incurs a net source of emissions under the provisions of Article 3, paragraph 3, of the Kyoto Protocol may account for anthropogenic greenhouse gas emissions by sources and removals by sinks in areas under forest management under Article 3, paragraph 4, up to a level that is equal to the net source of emissions under the provisions of Article 3, paragraph 3, but not greater than 9.0 megatonnes of carbon times five, if the total anthropogenic greenhouse gas emissions by sources and removals by sinks in the managed forest since 1990 is equal to, or larger than, the net source of emissions incurred under Article 3, paragraph 3.

[d] In accordance with decision 16/CMP.1, annex, paragraph 11, for the first commitment period only, additions to and subtractions from the assigned amount of a Party resulting from forest management under Article 3, paragraph 4, of the Kyoto Protocol after the application of decision 16/CMP.1, annex, paragraph 10, and resulting from forest management project activities undertaken under Article 6, shall not exceed the value inscribed in the appendix of the annex to decision 16/CMP.1, times five.

79. Based on the information provided in table 7 for the activity afforestation and reforestation, Austria shall: for non-harvested land, issue 10,116,695 removal units (RMUs) in its national registry and for harvested land, neither issue nor cancel any units in its national registry.

80. Based on the information provided in table 7 for the activity deforestation, Austria shall cancel 3,329,969 assigned amount units, emission reduction units, certified emission reduction units and/or RMUs in its national registry.

Calculation of the commitment period reserve

81. Austria has reported its commitment period reserve in its 2014 annual submission. Austria reported that its commitment period reserve has not changed since the initial report review (309,479,408 t CO_2 eq) as it is based on the assigned amount and not the most recently reviewed inventory. The ERT agrees with this figure.

3. Changes to the national system

82. Austria reported that there are no changes in its national system since the previous annual submission, and that the national system is unchanged compared with the description given in the initial report under the Kyoto Protocol. The ERT concluded that the Party's national system continues to be in accordance with the requirements of national systems outlined in decision 19/CMP.1.

4. Changes to the national registry

83. Austria reported that there are no changes in its national registry since the previous annual submission. However, there were limited changes that only affected the functionality of the European Union Emissions Trading System (EU ETS) and no change was required to the national database and application backup plan or to the disaster recovery plan. No changes to the capacity or the conformance to the technical standards of the national registry occurred during the reported period. The ERT concluded that the Party's national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1, and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant decisions of the Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol (CMP).

5. Minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol

84. Consistent with paragraph 23 of the annex to decision 15/CMP.1, Austria provided information relating to how it is striving, under Article 3, paragraph 14, of the Kyoto Protocol, to implement its commitments in such a way as to minimize adverse social, environmental and economic impacts on developing country Parties, particularly those identified in Article 4, paragraphs 8 and 9, of the Convention.

85. In its NIR, Austria describes its actions together with other Parties that are member States of the European Union to jointly fulfil the commitments under the Kyoto Protocol regarding key climate policies and measures (e.g. the EU ETS). In addition, Austria: seeks to ensure that response measures at the national level are effective through compulsory environmental, economic and social impact assessments of policies and measures, including, where appropriate, effects on other countries; has legally binding standards for Austrian joint implementation/clean development mechanism projects related to social and environmental criteria; strives to phase out market imperfections that run counter to the objective of the Convention; and uses fiscal incentives to advance the objectives of the Convention.

86. Austria reported that there are changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol since the previous annual submission. The Party described in its NIR the changes, which are due to the completion of the information in the 2013 NIR by updating this information according to recent developments. The ERT concluded that, taking into account the confirmed changes in the reporting, the information provided is complete and transparent.

III. Conclusions and recommendations

A. Conclusions

87. Table 8 summarizes the ERT's conclusions on the 2014 annual submission of Austria, in accordance with the Article 8 review guidelines.

Table 8
Expert review team's conclusions on the 2014 annual submission of Austria

Issue	*Expert review team assessment*	*Paragraph cross references for identified problems*
The ERT concludes that the inventory submission of Austria is complete (excluding LULUCF) with regard to categories, gases, years and geographical boundaries and contains both an NIR and CRF tables for 1990–2012		
Annex A sources[a]	Complete	
LULUCF[a]	Not complete	See table 3 above
KP-LULUCF	Complete	
The ERT concludes that the inventory submission of Austria has been prepared and reported in accordance with the UNFCCC reporting guidelines	Yes	
Austria's inventory is in accordance with the Revised 1996 IPCC Guidelines, the IPCC good practice guidance and the IPCC good practice guidance for LULUCF	Yes	
The submission of information required under Article 7, paragraph 1, of the Kyoto Protocol has been prepared and reported in accordance with decision 15/CMP.1	Yes	
Austria has reported information on its accounting of Kyoto Protocol units in accordance with decision 15/CMP.1, annex, chapter I.E, and used the required reporting format tables as specified by decision 14/CMP.1	Yes	
The national system continues to perform its required functions as set out in the annex to decision 19/CMP.1	Yes	
The national registry continues to perform the functions set out in the annex to decision 13/CMP.1 and the annex to decision 5/CMP.1 and continues to adhere to the technical standards for data exchange between registry systems in accordance with relevant CMP decisions	Yes	
Did Austria provide information in the NIR on changes in its reporting of the minimization of adverse impacts in accordance with Article 3, paragraph 14, of the Kyoto Protocol?	Yes	

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, CMP = Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol, CRF = common reporting format, ERT = expert review team,

IPCC = Intergovernmental Panel on Climate Change, IPCC good practice guidance = IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*, IPCC good practice guidance for LULUCF = IPCC *Good Practice Guidance for Land Use, Land-Use Change and Forestry*, KP-LULUCF = LULUCF emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol, LULUCF = land use, land-use change and forestry, NIR = national inventory report, Revised 1996 IPCC Guidelines = *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, UNFCCC reporting guidelines = "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual inventories".

[a] The assessment of completeness by the ERT considers only the completeness of reporting of mandatory categories (i.e. categories for which methods and default emission factors are provided in the Revised 1996 IPCC Guidelines, the IPCC good practice guidance or the IPCC good practice guidance for LULUCF).

B. Recommendations

88. The ERT identified the issues for improvement listed in table 9. All recommendations are for the next annual submission, unless otherwise specified.

Table 9
Recommendations identified by the expert review team

Sector	*Category cross-cutting issue*	*Recommendation*	*Reiteration of previous recommendation?*	*Paragraph cross references*
Cross-cutting	Transparency	Correct the last row in table 10 of the NIR by changing "excluding LULUCF" to "including LULUCF"	No	13
		Correct the column headings in tables 9–11 and A155–A157 of the NIR	No	14
Energy	Comparison of the reference approach with the sectoral approach and international statistics	Include the information provided to the ERT during the review regarding the International Energy Agency's inclusion of military jet kerosene data in the jet kerosene consumption data for civil aviation, in the NIR	No	24
		Continue efforts to harmonize the fuel consumption data for domestic aviation and navigation between the CRF tables, for which a bottom-up approach is used, and the IEA reports, which rely on a top-down approach, and report the results in the NIR	No	24
	Stationary combustion: solid fuels – CH_4	Use the appropriate notation key, "IE", for all emissions from coke production	Yes	27
	Road transportation: liquid fuels – CH_4 and N_2O	Report N_2O and CH_4 emissions from biomass separately	Yes	30
	Navigation: liquid fuels – CO_2, CH_4 and N_2O	Include supporting material and explanations in the NIR whenever inconsistencies in trends of emissions or implied emission factors occur	No	31

Sector	*Category/cross-cutting issue*	*Recommendation*	*Reiteration of previous recommendation?*	*Paragraph cross references*
	Other (energy) – CH_4	Investigate further the production of charcoal and improve the related estimates of CH_4 fugitive emissions for the years 1990–2004 in order to increase the accuracy of the reporting	No	33
Industrial processes and solvent and other product use	Lime production – CO_2	Include in the NIR a mass balance with data on the lime produced, the CO_2 produced by calcination, the coke consumed and the mass of $CaCO_3$ produced	Yes	36
		Include a description of the use of the total amount of $CaCO_3$ obtained	Yes	36
	Consumption of halocarbons and SF_6 – HFCs and PFCs	Include a more detailed and transparent description as to where emissions of HFC-23 are included	No	37
		Correct the description of the data source used for domestic refrigeration in the NIR	No	38
Agriculture	Direct and indirect soil emissions – N_2O	Report on the results of specific research activities to establish a country-specific value for $Frac_{LEACH}$	No	51
LULUCF	General	Use the results of the uncertainty analysis to prioritize the aspects of the inventory that require refinement, in order to improve the accuracy and possibly to reduce the overall uncertainty of the LULUCF inventory	Yes	55
	Forest land remaining forest land – CO_2	Provide estimates of the carbon stock changes for "forests not in yield" when the new NFI data become available and use the correct notation key	Yes	57
		Provide estimates of the carbon stock changes in mineral soils for "forests not in yield" using best available data	No	58
		Enhance the description of the method used to report the litter and dead wood separately in the dead organic matter and soil pools in the annual submission, for example by including references in the documentation box in the CRF tables, in order to improve the transparency of the reporting	No	59

Abbreviations: CRF = common reporting format, ERT = expert review team, $Frac_{LEACH}$ = fraction of nitrogen input to soils that is lost through leaching and run-off, IE = included elsewhere, IEA = International Energy Agency, LULUCF = land use, land-use change and forestry, NFI = national forest inventory, NIR = national inventory report.

IV. Questions of implementation

89. No questions of implementation were identified by the ERT during the review.

Annex I

Information to be included in the compilation and accounting database

Table 10
Information to be included in the compilation and accounting database in t CO_2 eq for 2012, including the commitment period reserve

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Commitment period reserve	309 479 408			309 479 408
Annex A emissions for 2012				
CO_2	67 733 469			67 733 469
CH_4	5 306 176			5 306 176
N_2O	5 221 634			5 221 634
HFCs	1 431 452			1 431 452
PFCs	40 457			40 457
SF_6	326 175			326 175
Total Annex A sources[c]	**80 059 363**			**80 059 363**
Activities under Article 3, paragraph 3, for 2012				
3.3 Afforestation and reforestation on non-harvested land for 2012	–2 051 862			–2 051 862
3.3 Afforestation and reforestation on harvested land for 2012	NO			NO
3.3 Deforestation for 2012	546 278			546 278
Activities under Article 3, paragraph 4, for 2012[d]				
3.4 Forest management for 2012				
3.4 Cropland management for 2012				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2012				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2012				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 11
Information to be included in the compilation and accounting database in t CO_2 eq for 2011

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2011				
CO_2	70 353 698			70 353 698
CH_4	5 393 543			5 393 543
N_2O	5 282 995			5 282 995
HFCs	1 349 002			1 349 002
PFCs	60 071			60 071
SF_6	321 530			321 530
Total Annex A sources[c]	**82 760 839**			**82 760 839**
Activities under Article 3, paragraph 3, for 2011				
3.3 Afforestation and reforestation on non-harvested land for 2011	–2 045 472			–2 045 472
3.3 Afforestation and reforestation on harvested land for 2011	NO			NO
3.3 Deforestation for 2011	558 544			558 544
Activities under Article 3, paragraph 4, for 2011[d]				
3.4 Forest management for 2011				
3.4 Cropland management for 2011				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2011				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2011				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 12
Information to be included in the compilation and accounting database in t CO_2 eq for 2010

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2010				
CO_2	72 366 115			72 366 115
CH_4	5 562 123			5 562 123
N_2O	5 178 528			5 178 528
HFCs	1 285 648			1 285 648
PFCs	63 934			63 934
SF_6	351 500			351 500
Total Annex A sources[c]	**84 807 848**			**84 807 848**
Activities under Article 3, paragraph 3, for 2010				
3.3 Afforestation and reforestation on non-harvested land for 2010	–2 039 081			–2 039 081
3.3 Afforestation and reforestation on harvested land for 2010	NO			NO
3.3 Deforestation for 2010	570 811			570 811
Activities under Article 3, paragraph 4, for 2010[d]				
3.4 Forest management for 2010				
3.4 Cropland management for 2010				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2010				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2010				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 13
Information to be included in the compilation and accounting database in t CO_2 eq for 2009

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2009				
CO_2	67 567 756			67 567 756
CH_4	5 642 348			5 642 348
N_2O	5 417 429			5 417 429
HFCs	1 134 264			1 134 264
PFCs	28 640			28 640
SF_6	357 535			357 535
Total Annex A sources[c]	**80 147 974**			**80 147 974**
Activities under Article 3, paragraph 3, for 2009				
3.3 Afforestation and reforestation on non-harvested land for 2009	–2 032 691			–2 032 691
3.3 Afforestation and reforestation on harvested land for 2009	NO			NO
3.3 Deforestation for 2009	583 078			583 078
Activities under Article 3, paragraph 4, for 2009[d]				
3.4 Forest management for 2009				
3.4 Cropland management for 2009				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2009				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2009				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Table 14
Information to be included in the compilation and accounting database in t CO_2 eq for 2008

	As reported	*Revised estimates*	*Adjustment*[a]	*Final*[b]
Annex A emissions for 2008				
CO_2	73 804 484			73 804 484
CH_4	5 743 372			5 743 372
N_2O	5 694 156			5 694 156
HFCs	1 082 021			1 082 021
PFCs	167 125			167 125
SF_6	390 871			390 871
Total Annex A sources[c]	**86 882 030**			**86 882 030**
Activities under Article 3, paragraph 3, for 2008				
3.3 Afforestation and reforestation on non-harvested land for 2008	–1 947 590			–1 947 590
3.3 Afforestation and reforestation on harvested land for 2008	NO			NO
3.3 Deforestation for 2008	1 071 259			1 071 259
Activities under Article 3, paragraph 4, for 2008[d]				
3.4 Forest management for 2008				
3.4 Cropland management for 2008				
3.4 Cropland management for the base year				
3.4 Grazing land management for 2008				
3.4 Grazing land management for the base year				
3.4 Revegetation for 2008				
3.4 Revegetation for the base year				

Abbreviations: Annex A sources = source categories included in Annex A to the Kyoto Protocol, NO = not occurring.

[a] "Adjustment" is relevant only for Parties for which the expert review team has calculated one or more adjustment(s).

[b] "Final" includes revised estimates, if any, and/or adjustments, if any.

[c] The values for "Total Annex A sources" in the columns "As reported", "Revised estimates" and "Final" may not equal the sum of the values for the gases in those columns owing to rounding.

[d] Activities under Article 3, paragraph 4, are relevant only for Parties that elected one or more such activities.

Annex II

Documents and information used during the review

A. Reference documents

Intergovernmental Panel on Climate Change. *2006 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.

Intergovernmental Panel on Climate Change. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gl/invs1.htm>.

Intergovernmental Panel on Climate Change. *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*. Available at <http://www.ipcc-nggip.iges.or.jp/public/gp/english/>.

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"Guidelines for national systems for the estimation of anthropogenic greenhouse gas emissions by sources and removals by sinks under Article 5, paragraph 1, of the Kyoto Protocol". Decision 19/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf#page=14>.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Decision 15/CMP.1. Available at <http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf#page=54>.

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Status report for Austria 2014. Available at <http://unfccc.int/resource/docs/2014/asr/aut.pdf>.

Synthesis and assessment report on the greenhouse gas inventories submitted in 2014. Available at <http://unfccc.int/resource/webdocs/sai/2014.pdf>.

FCCC/ARR/2013/AUT. Report of the individual review of the annual submission of Austria submitted in 2013. Available at <http://unfccc.int/resource/docs/2014/arr/aut.pdf>.

Standard independent assessment report template, parts 1 and 2. Available at <http://unfccc.int/kyoto_protocol/registry_systems/independent_assessment_reports/items/4061.php>.

B. Additional information provided by the Party

Responses to questions during the review were received from Ms. Katja Pazdernik (Umweltbundesamt), including additional material on the methodology and assumptions used. The following document[1] was also provided by Austria:

André Leisewitz, Winfried Schwarz. 2010. Assessment of the Consumption and the Real Emissions of Fluorinated Greenhouse Gases in Austria 2000-2008.

[1] Reproduced as received from the Party.

Annex III

Acronyms and abbreviations

AD	activity data
AWMS	animal waste management system
C	carbon
$CaCO_3$	calcium carbonate
CH_4	methane
cm	centimeter
CMP	Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
CRF	common reporting format
EF	emission factor
ERT	expert review team
EU ETS	European Union Emissions Trading System
$Frac_{GASF}$	Fraction of N lost through gaseous emissions of NH_3 and NO_XGHG greenhouse gas; unless indicated otherwise, GHG emissions are the sum of CO_2, CH_4, N_2O, HFCs, PFCs and SF_6 without GHG emissions and removals from LULUCF
$Frac_{GASM}$	Fraction of animal manure that is volatized as NH_3 and nitrogen oxides (NO_X)
$Frac_{LEACH}$	Fraction of N input to soils that is lost through leaching and run-off
ha	hectareHFCs hydrofluorocarbons
IE	included elsewhere
IEF	implied emission factor
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ITL	international transaction log
kg	kilogram (1 kg = 1,000 grams)
km	kilometer
KP-LULUCF	land use, land-use change and forestry emissions and removals from activities under Article 3, paragraphs 3 and 4, of the Kyoto Protocol
kt	kilotonne (1 kt = 1,000 tonnes)
LPG	liquefied petroleum gas
LULUCF	land use, land-use change and forestry
MCF	methane conversion factor
MJ	megajoule
N	nitrogen
N_2O	nitrous oxide
NA	not applicable
NE	not estimated
NFI	national forest inventory
NH_3	ammonia
NIR	national inventory report
NO	not occurring
NO_x	nitrogen oxides
PFCs	perfluorocarbons
PJ	petajoule (1 PJ = 10^{15} joule)
QA/QC	quality assurance/quality control
RMU	removal unit
SEF	standard electronic format
SF_6	sulphur hexafluoride

SIAR	standard independent assessment report
t	tonne
TAN	total ammoniacal nitrogen
TJ	terajoule (1 TJ = 10^{12} joule)
UNFCCC	United Nations Framework Convention on Climate Change
Ym	methane conversion rate